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The Dynamics of Posttraumatic Growth Across Different Trauma Types in a Palestinian Sample

IBRAHIM A. KIRA and SHARIFA ABOUMEDIENE
Center for Cumulative Trauma Studies, Stone Mountain, Georgia, USA

JEFFREY S. ASHBY and LYDIA ODENAT
College of Education, Georgia State University, Atlanta, Georgia, USA

JAMAL MOHANESH
ACCESS Community Health and Research Center, Dearborn, Michigan, USA

HALA ALAMIA
Center for Cumulative Trauma Studies, Stone Mountain, Georgia, USA

A Palestinian sample was used to explore the dynamics of posttraumatic growth (PTG) across different trauma types. Cumulative trauma, posttraumatic stress disorder, depression, anxiety, PTG, and stress-related growth (SRG) measures were administered. As predicted, only type I traumas were associated with PTG. Type II traumas were not associated with PTG, while type III collective identity traumas were negatively associated with PTG. Results indicated that PTG was not a significant predictor of any mental health symptoms and that PTG is different from SRG, which seems to describe growth in non-traumatic situations. The results suggest that it is important to analyze trauma profiles rather than single trauma.

KEYWORDS cumulative trauma related disorders, curvilinear predictors, development-based trauma framework (DBTF), Palestinians, posttraumatic growth

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Address correspondence to Ibrahim A. Kira, Center for Cumulative Trauma Studies, 4906 Woodhurst Way, Stone Mountain, GA 30088, USA. E-mail: kiraaref@aol.com

Interest in Tedeschi and Calhoun's (1996) conceptualization of posttraumatic growth (PTG) as a psychological construct related to the experience of traumatic events has grown in recent years. PTG is defined as positive psychological change that is experienced as a result of struggles with highly challenging life circumstances (Tedeschi & Calhoun, 1996). Tedeschi and Calhoun (1996) suggested that evidence of posttraumatic growth for an individual can be found in five domains: appreciation for life, connection with others, personal strength, new possibilities, and spiritual growth. Some other authors have found evidence for three components (interpersonal relationships, new possibilities, and personal strength) (e.g., Weiss & Berger, 2006). Additional studies of the construct have found only two correlated components of relational or outward and internal or intrapersonal growth (Levine, Laufer, Hamama-Raz, Stein, & Solomon, 2008, and the present research). PTG, by definition, should be associated with some types of trauma. It may be associated with posttrauma symptoms but does not predict them.

The Post-Traumatic Growth Inventory (PTGI) is a unique measure that assesses trauma-related growth. Another measure often utilized is stress-related growth (SRG) (Park, Cohen, & Murch, 1996). The construct measured by SRG is different from PTG, as it may or may not be associated with traumatic stress.

Not all individuals exposed to a trauma develop posttrauma symptoms. Only a small subset of trauma victims develop posttraumatic stress disorder (PTSD) (<10%) (e.g., Breslau, 2009). Some of the rest (90%) will return to pre-event functioning (McFarlane & Yehuda, 1996), and others may develop posttraumatic growth without symptoms; however, some of the 10% who develop symptoms may develop posttraumatic growth at the same time, which complicates the picture. This association begs the question, for those who develop symptoms and growth: What is the threshold for tolerating symptoms and growth at the same time, and which specific symptoms and specific trauma types may be tolerated within the framework of growth? Another related issue is that if PTG is correlated with elevation of some of these symptoms, is PTG a contributing predictor of those symptoms, or are the associations between them spurious or indicative of different dynamic processes? Posttraumatic symptoms may include PTSD, complex PTSD (or cumulative trauma-related disorders), depression, and/or anxiety and are not limited to only PTSD.

Mixed findings characterize the relationship between PTSD and PTG. The relationship has taken four forms: (a) a negative relationship (Johnson et al., 2007), (b) a positive relationship (Tedeschi & Calhoun, 1996), (c) PTSD and growth as separate outcomes that may coexist independently (Linley & Joseph, 2004), and (d) a relationship that follows an inverted U (i.e., a quadratic curve) (e.g., Levine et al., 2008). A quadratic relationship may offer the best explanation of the mixed findings regarding the relationship between PTSD and growth (Maercker & Langner, 2001). Low- and high-intensity PTSD may increase growth less than moderate levels of PTSD that correspond to the greatest growth (Solomon & Dekel, 2007).

The relationships between PTG and different trauma types have not been addressed in theory or systematic research. There is no empirical evidence, so far, that confirms that growth can follow any type of trauma at the same rate or at all. Given the fact that there are different types of trauma and some trauma types may be more or less conducive to growth than the others, it is interesting to explore if this assumption of growth after trauma applies to all trauma types at all levels of intensity. PTG theory does not address which traumas might contribute more or less to expected growth, or if some trauma types (e.g., incest, sexual abuse, and attachment disruptions, as well as discrimination and slavery) can be too detrimental to allow for personal post-traumatic growth. Further, although previous research has identified two to five components of PTG, it has not identified which components of PTG might be more or less affected by each trauma type.

Kira (2001, 2004, 2010) and Kira et al. (2008, 2011) proposed a two-way taxonomy of traumatic stressors that is both theoretically and empirically based. The first dimension of the taxonomy is based on developmental theory and classifies traumatic stressors according to the emerging developmental functions affected by traumas: attachment (e.g., parental abandonment), individuation/identity and personal (e.g., violation of autonomy of the self and betrayal by incest, rape, and sexual and/or physical abuse), collective or shared (e.g., targeted genocide, holocaust, slavery, and discrimination), self-actualization or role identity (e.g., loss of life savings, failed business, being unexpectedly fired, failing/dropping out of school/college), physical identity or physical survival (e.g., life-threatening accident), and interdependence or indirect, shared, or secondary trauma (e.g., first responders, compassion fatigue, or witnessing traumatic events). The taxonomy differentiates between four types of traumas: type I, when a traumatic event happened once and stopped (e.g., car accident); type II, when a traumatic event happened several times in the past and stopped (e.g., physical and sexual abuse and parental abandonment); type III, when a traumatic event happened, continued to happen, and did not stop (e.g., discrimination and racism); and type IV, when there is cumulative trauma that consists of the accumulative effects of different types of victimization and trauma. Cumulative trauma burden, intense adversities, and polyvictimization across the life span have been found to contribute to significant unique variance in mental health outcomes beyond that accounted for by the combination of all aggregate trauma types (e.g., Kira et al., 2008; Richmond, Elliott, Pierce, Aspelmeier, & Alexander, 2009).

This development-based traumatology framework (DBTF) gives us a tool to measure different trauma types and their relationships with PTG. In this research, the Cumulative Trauma Scale, a measure developed based on the DBTF, was utilized to evaluate the effects of different trauma types and cumulative trauma on posttraumatic and stress-related growth. In particular, the DBTF framework was used to explore the relationships between

PTG, different types of traumas, and mental health variables in a multiply traumatized Palestinian adult sample. Further, the study explored if these relationships with PTG are the same as with SRG. The following hypotheses were tested.

Hypothesis 1: Type I traumas will be associated with PTG, while type 2 traumas, which are more severe, will not be significantly associated with PTG. Type III traumas, the most severe type, will be negatively associated with PTG.

Hypothesis 2: The relationships between PTG and PTSD, cumulative trauma-related disorder (CTD), depression, and anxiety will be mostly nonlinear. However, PTG will not be predictive of any other variables.

Hypothesis 3: SRG, as a different concept from PTG, will not be correlated with any type of trauma and will be negatively associated with posttrauma symptoms.

METHODS

Participants

Participants included 132 adults between 18 and 63 years of age (overall $M = 31.21$, $SD = 9.769$; $M = 32.81$, $SD = 10.36$, for males; $M = 28.98$, $SD = 8.61$, for females); 58% were males and 42% females. Almost all of the participants (99.2%) were Muslims; 0.8% were Christians. The mean family size was 7.24 ($SD = 3.217$), suggesting an overall large family size for the participants. Table 1 details marital status, education, work, and place of living categories for each gender and for the total sample.

Measures

The *Post-Traumatic Growth Inventory* (PTGI; Tedeschi & Calhoun, 1996) assesses perceived positive life changes following stressful experiences (e.g., enhanced relationships, greater life appreciation). In completing the 21 items, participants responded on a scale from 0 (*I did not experience this change as a result of my experience*) to 5 (*I experienced this change to a very great degree*). The measure includes five subscales that measure the five identified domains. The first subscale, relating to others, includes statements like "I have a greater sense of closeness with others." The second subscale, new possibilities, includes statements like "I am able to do better things with my life." The third subscale, personal strength, includes statements like "I discovered that I am stronger than I thought I was." The fourth subscale, spiritual change, includes statements like "I have a better understanding of

TABLE 1 Distribution of Marital Status, Current Work, Education, and Place of Residence According to Gender.

Demographic variable	Male (%)	Female (%)	Total (%)
Marital status			
Married	52.1	42.6	48.0
Single	43.8	50.0	46.5
Separated	1.4	0	.8
Divorced	1.4	7.4	3.9
Other	1.4	0	.8
Current work status			
Employee	52.6	48.1	50.8
Worker	9.2	0	5.4
Merchant	1.3	0	.8
Trade	1.3	0	.8
Physician	7.9	0	4.6
Retired	3.9	0	2.3
Student	10.5	20.4	14.6
Other	13.2	31.5	20.8
Education			
Illiterate	0	1.8	.8
Read and write	2.7	1.8	2.3
Elementary school	1.4	0	.8
Intermediate	6.8	3.6	5.4
High school	16.2	10.9	14.0
University graduate	55.4	76.4	64.3
Graduate studies	17.6	5.5	12.4
Place of residence			
Village	18.7	9.1	14.6
City	29.3	30.9	30.0
Refugee camp	52.0	60.0	55.4

spiritual matters.'' Finally, the fifth subscale, appreciation of life, includes statements like ''I have a greater appreciation of the value of my own life.'' Recent studies utilizing the measure have found evidence for two correlated components of relational or outward and internal or intrapersonal growth in Israeli adolescents (e.g., Levine et al., 2008) and in the current sample. In a validation study (Tedeschi & Calhoun, 1996) the internal consistency (alpha) of the total PTGI was .90 and the test-retest reliability (*R*) was .71. The measure has sound psychometric properties in the Arabic version, with an alpha of .96 for the main measure. Alpha reliability for the five subscales ranged between .75 and .87 (.95 for internal growth and .85 for relational growth) in the current data. The current study utilized the total PTGI score and all of the seven subscales.

The *Cumulative Trauma Scale* (short form; CTS-S) includes 32 items and is based on the DBTF framework (Kira, 2001; Kira et al., 2008, 2011). Each item describes extremely stressful events that are related to six main types of trauma: attachment, personal identity, collective identity, secondary, gender discrimination, and survival traumas. The participants were asked to

report if they had experienced the event, how many times, at what age did they experience it for the first time, and how much it affected them positively or negatively on a scale from 0 to 7. The measure includes two scales of cumulative trauma, occurrence and frequency, as well as two appraisal subscales, negative and positive. It includes, at this level, four subscales for each trauma type. The measure has been used previously with different clinical and community populations of adults and children, and in different cultures, and has proved to have adequate reliability (alphas ranging between .80 and .92) and good construct and predictive validity (e.g., Kira et al., 2008, 2011). The current study utilized only the trauma occurrence scales.

The *Clinician-Administered PTSD Scale* (CAPS-2) is a structured clinical interview that assesses 17 symptoms rated on frequency and severity on a 5-point scale. The CAPS has demonstrated high reliability, with a range from .92–.99, and good convergent and discriminant validity (Weathers, Keane, & Davidson, 2001). The current study utilized the frequency subscale, which is widely used in psychiatric research. The instrument has four factor subscales: reexperiencing, avoidance, arousal, and emotional numbness or dissociation. The measure and its four subscales have high reliability, with an alpha of .97 for the main scale and .96, .92, .89 and .85 for the four subscales, respectively.

The *Center for Epidemiologic Studies Depression Measure* (CES-D; Radloff, 1977) is a 20-item scale wherein each item is assessed on a 4-point scale and reflects the frequency that each symptom is experienced (0 = *none none of the time*, 3 = *all of the time*). Adequate reliability and validity have been reported for the CES-D. A cutoff score of $\geq$16 is commonly used for the CES-D to indicate a need for further assessment of the presence of major depressive disorder (Radloff, 1977). High internal consistency reliability results (ranging from .85 to .92) have been found for the CES-D among various age, sex, geographic, and racial-ethnic subgroups. Validation studies have found that the CES-D has good convergent and discriminant validity and high sensitivity and specificity (Mulrow et al., 1995). Internal consistency reliability (Cronbach's alpha) for the present study was .91.

The *Depression Anxiety Scales* (anxiety subscale; DASS-A; 14 items), a 42-item instrument developed by Lovibond and Lovibond (1995), include three subscales that measure depression, anxiety, and stress. The DASS-A subscale measures anxiety, which is increasingly used in different clinical and research settings. Several studies suggest that the DASS-A possesses adequate convergent validity, with reliability of .84 in nonclinical samples and .89 and .91 in clinical samples (e.g., Lovibond & Lovibond, 1995). Internal consistency reliability (Cronbach's alpha) for the present study was .95.

The 15-item *Cumulative Trauma-related Disorders Measure* (CTD) was developed on five community and clinic samples of adults, adolescent Iraqi refugees, Arab Americans, and African Americans. It is an index measure that covers 13 different symptoms that include somatization, dissociation, auditory and visual hallucinations, paranoid ideations, concentration and

memory deficits, loss of self-control, and feeling suicidal. Exploratory and confirmatory factor analysis found four factors: executive function deficits, suicidality, dissociation, and depression/anxiety comorbidity. It has good reliability (ranging from .85 and .98 in five different studies). Test-retest reliability in a 6-week interval was .76. The measure has good convergent, divergent, and predictive validity. Different kinds of traumas and cumulative trauma in general accounted for significant variance as predictors of CTD symptoms (e.g., Kira, Clifford, Wiencek, & Al-Haider, 2001). The scale had an alpha coefficient of .90 in this study.

Stress-related growth is defined as the perception or experience of deriving benefits from encountering stressful circumstances and, thus, has been identified as a protective factor against stress. The *Stress-Related Growth Scale* (SRGS; Park et al., 1996) is a 50-item scale developed and validated in several samples. Factor analysis revealed a single unitary factor, suggesting that a total score should be used for the scale. In the validation sample, the Cronbach's alpha was .94, and 2-week test-retest reliability was .81. In the current study, we utilized the 15-item short form developed by Cohen, Hettler, and Payne (1998). Items from this scale were rated from 1 (*not at all*) to 3 (*a great deal*). Participants were asked to respond to each item with respect to the most stressful event they had experienced. The measure had adequate alpha reliability in the current study (.82).

Procedure

The study was approved by the Gaza Palestinian Authority. Participants were recruited through snowballing utilizing the two political representatives and their staff. Participation was completely voluntary and fully informed. Research participants were told that they could withdraw from the study at any time. Subjects were informed of the nature of the research and that it was aimed at understanding the effects of different traumas. Active informed written consent was obtained. Some subjects approved verbally and chose not to sign due to the political situation at the time or for other reasons. No identifying information was recorded that could link the subjects to their data. The disclosure of the data could not reasonably place the subjects at any risk or any liability according to federal and local human subjects guidelines. Interviews took place in private rooms to ensure privacy, and were conducted face-to-face in Arabic by trained Palestinian research associates. Interviews took between 45 and 60 minutes as they included other measures than those utilized here. A break was allowed when called for.

A snowballing technique was utilized in the recruitment process. This technique is usually utilized in sampling populations when no sufficient statistical information is available or with groups that are not easily accessible to researchers through other sampling strategies (e.g., Kalton & Anderson,

1986). The participation rate was 75% from contacted subjects. The other 25% included refusals, withdrawals, and uncompleted interviews.

The measures used in this study were previously pilot tested in focus groups, and have previously been shown to have adequate reliability and validity with Iraqi and Arab populations and in Arabic and English languages (e.g., Kira et al., 2001, 2006, 2008). These measures were previously translated into Arabic by three bilingual mental health professionals who met to establish a consensus on the final version. A fourth mental health professional reverse translated each measure to ensure their accuracy and fidelity.

Data Analysis

Frequencies and descriptive statistics were calculated to explore the characteristics of the sample concerning their level of traumatization, epidemiology of mental health symptoms, and level of PTG. Partial correlation, curve estimation, and hierarchical multiple regression analyses were conducted between PTG, its variables, SRG, trauma types, PTSD, CTD, depression, and anxiety to explore their linear and nonlinear relationship and to check the study hypotheses.

RESULTS

Descriptive Results

The mean total PTGI score was 55.54 ($SD = 26.84$), indicating a modest to moderate degree of posttraumatic growth for the sample. Descriptive statistics for other variables are presented in Table 2.

Mental Health Profile

Participants in the study reported varied levels of mental health symptoms. On the depression scale (mean total depression score: 17.83, $SD = 11.42$), 56.1% of participants scored above the recommended cut-off score for diagnosable major depression (≥ 16). For anxiety (mean total anxiety score: 10.54, $SD = 8.79$), 5.3% scored in the range of 8–9 (mild anxiety), 19% in the range of 10–14 (moderate anxiety), 16.5% in the range of 15–19 (severe anxiety), and 16.7% in the 20+ range (extremely severe anxiety). For PTSD (mean total PTSD score: 31.22, $SD = 17.35$), 46.9% scored above the suggested cut-off score for diagnosable PTSD. For CTD (mean total CTD score: 30.67, $SD = 12.81$), 46% scored above the mean score.

Trauma Profile

Participants were *highly multiply traumatized.* With respect to cumulative trauma occurrence (not frequency), the mean total cumulative trauma score

TABLE 2 Means and Standard Deviation for Study Variables.

Variable	*M*	*SD*	Variable	*M*	*SD*
Cumulative trauma occurrence	9.27	4.97	CTD-depression and anxiety comorbidity subscale	7.65	3.03
Positive appraisal of traumatic events	2.57	5.30	CTD-executive function deficits subscale	4.00	2.26
Negative appraisal of traumatic events	9.72	10.24	CTD-psychosis subscale	5.41	2.99
Gender discrimination	.36	.60	PTSD	31.22	17.35
Gender discrimination negative appraisal	.42	1.09	PTSD reexperiencing subscale	8.36	7.30
Collective identity traumas	1.49	.72	PTSD avoidance subscale	4.38	4.15
Attachment traumas	.038	.23	PTSD arousal subscale	7.21	6.11
Attachment trauma negative appraisal	.10	.56	PTSD emotional numbness/ dissociation subscale	5.36	5.08
Personal identity traumas	.43	.90	Depression	17.83	11.42
Personal identity trauma negative appraisal	.39	1.29	Anxiety	10.54	8.79
Survival traumas	3.34	2.72	Stress-related growth	36.50	5.42
Survival trauma negative appraisal	4.23	4.86	PTG inventory total	55.55	26.73
Uprootedness trauma	.64	.79	PTG internal growth	56.64	20.20
Uprootedness trauma negative appraisal	.96	1.78	PTG relational growth	19.86	7.749
Secondary trauma occurrence	1.95	1.32	PTG relationships with others subscale	23.89	8.87
Secondary trauma negative appraisal	3.04	3.05	PTG new possibilities subscale	18.43	7.15
Torture trauma	.17	.37	PTG personal strength subscale	15.30	5.81
Torture negative appraisal	.25	.78	PTG spiritual growth subscale	8.01	3.28
Torture severity scale	.97	2.07	PTG appreciation of life subscale	10.83	4.23
CTD	30.67	12.81			
Suicidality subscale	3.23	2.29			

was 9.27 ($SD = 4.97$). All participants were exposed to/experienced at least 3 different traumatic events, 25.7% experienced 4–6 different traumatic events, 31.1% experienced 7–10 different traumatic events, and 26.4% experienced 11–15 different traumatic events, while 8.3% experienced 16–32 different traumatic events. Among the participants, 84.1% had endured at least one secondary trauma ($M = 1.95$, $SD = 1.32$), 87.1% had endured at least one collective identity trauma ($M = 1.49$, $SD = .038$), 81.8% had endured at least one survival trauma ($M = 3.34$, $SD = 2.72$), 26.5% had endured at least one personal identity trauma ($M = .432$, $SD = .931$), 14.4% had endured at least one achievement trauma ($M = .14$, $SD = .352$), 30.3% had endured at least one gender discrimination trauma ($M = .364$, $SD = .596$), and 3.1% had endured at least one attachment trauma ($M = .038$, $SD = .228$).

Of the participants, 79.5% reported being part of a poor family with many hardships, 41.7% experienced natural disasters, 44.7% experienced life-threatening accidents, 20% suffered discrimination and stereotyping, 69.7% reported having a history of oppression and genocide threat, and 14.4% suffered employment termination, failed businesses, or frequent failures in school. A total of 29.4% reported having been in jail., of whom 75% reported severe torture in jail; 70% of those who had been tortured were between the ages of 12 and 20 when first tortured. Thirty-five percent experienced gender discrimination by society, 11.4% experienced gender discrimination by parents, 3% reported being led to sexual contact with people older than them when they were younger, 7.6% reported having been sexually abused or raped, 1.5% reported sexual abuse by parents or caregivers, 2.3% reported being abandoned by their mother, 1.5% reported being abandoned by their father, and 3.8% reported witnessing domestic violence when they were young. Finally, 62.9% reported that they were involved in war or combat, 30.3% reported that they had been uprooted and forced to move from their favorite village or town, and 33.3% reported having been uprooted and forced to move from their country of origin.

Association between PTG variables, SRG, trauma types, and mental health variables

To investigate the associations between PTG variables, SRG, trauma types, and mental health variables, partial correlation analyses were conducted controlling for gender, age, marital status, and education. Cumulative trauma was positively associated with overall PTG and with posttraumatic internal growth (but not with relational growth), appreciation of life, personal strength, and new possibilities. Gender discrimination, personal identity traumas (e.g., sexual or physical abuse, being robbed), and attachment traumas (abandonment by mother and/or father) were not significantly associated with PTG. Collective identity traumas (type III traumas, e.g., discrimination and poverty) had a significant negative association with the PTG total scale scores and with the internal growth, spiritual growth, and personal strength subscales. Survival, secondary, and uprootedness traumas had positive significant or close to significant associations with all PTG variables except relational growth. However, their positive associations with the relations with others subscale were significant.

While SRG was significantly associated with PTG, it was not correlated with any of the trauma types. These results were in contrast to those for PTG, which had a positive association with survival, secondary, and uprootedness traumas and a negative association with collective identity traumas.

For mental health variables, PTSD, CTD, and anxiety were not significantly associated with PTG. Depression was significantly associated with PTG. On the other hand, SRG had significant negative associations with

CTD. Table 3 describes the partial correlations between PTG variables, trauma types, mental health variables, and SRG.

Association between specific traumas and PTG variables

Partial correlation analyses were conducted between specific traumatic events and PTG and its seven factors, controlling for gender, age, marital status, and education. The findings indicated that torture, while not associated with total PTG scores, was significantly associated with internal and spiritual growth. War or combat traumas were positively associated with the appreciation of life subscale. Experiencing life-threatening illnesses was positively associated with internal self-growth, appreciation of life, and spiritual growth. Domestic violence was not associated with any of the PTG components. While abandonment by mother was not associated with any of the PTG components, abandonment by father was positively associated with PTG total scores and the internal growth, personal growth, and new possibilities subscales. Experiencing a nervous breakdown due to non-traumatic recurrent stressors (recurrent or unremitting hassles or chronic stressors) was significantly and positively associated with internal growth only. Serious rejection or failure in relationships was positively associated with internal growth and appreciation of life. School or business failure was positively associated with only the appreciation of life subscale. Uprootedness (e.g., refugees' experience) was significantly and positively associated with total PTG scores, internal growth, appreciation of life, and new possibilities. Being attacked or hit by a person or persons who are bigger and stronger than oneself was positively associated with PTG total scale scores and the appreciation of life, personal strength, new possibilities, and relationships with others subscales. While gender discrimination by parents was not associated with PTG or any of its components, gender discrimination by society was positively associated with PTG total scale scores, as well as with inner growth and relationships with others scores. Being oppressed, being discriminated against, and history of genocide were inversely related to PTG. Poverty showed an inverse and close to significant association with PTG. Table 4 describes these relationships.

Curve Estimation Results

To check the first part of the study's second hypothesis that the relationships between PTG, severe trauma, and post-trauma symptoms are mostly non-linear, curve estimation regression analyses were conducted. While PTSD was not found to be a significant linear or curvilinear predictor of PTG in this population, CTD (another form of complex PTSD) was a significant linear and curvilinear predictor of PTG. While depression and anxiety were only linear predictors of PTG, depression/anxiety comorbidity syndrome was a

TABLE 3 Partial Correlations Between the Variables of PTG, SRG, Cumulative Trauma, Trauma Types, PTSD, Depression, and Anxiety After Controlling for Demographics.

	PTGI	F1	F2	Subscale 1	Subscale 2	Subscale 3	Subscale 4	Subscale 5	SRG
Cumulative trauma	.229*	.270**	.023	.290**	.186	.218*	.198*	.186	−.002
Gender discrimination	.138	.179	−.006	.183	.097	.140	.083	.136	.035
Collective identity traumas	−.206*	−.255**	−.005	−.168	−.251**	−.273**	−.132	−.166	.104
Attachment traumas	.146	.158	.037	.153	.088	.147	.165	.110	.103
Personal identity traumas	.093	.131	−.022	.147	.153	.110	.042	.048	−.066
Survival traumas	.201*	.244**	.010	.225*	.171	.218*	.157	.170†	−.084
Uprootedness trauma	.266**	.321**	.018	.322**	.232*	.284**	.237**	.192*	−.007
Secondary trauma	.222*	.241**	.140	.220*	.207*	.227*	.138	.228**	.049
Depression	.218*	.221*	.070	.238**	.185	.175	.185	.214*	−.078
Anxiety	.165*	.202*	.014	.191*	.037	.147	.185†	.165†	−.138
PTSD	.069	.126	−.054	−.002	.027	.003	.055	−.002	−.141
CTD	.121†	.141*	.051	.164*	.111	.078	.118	.101	−.347**
SRG	.284**	.141	.270**	.322***	.120	.204*	.291**	.285**	

Note. F1 = post-trauma internal growth factor; F2 = post-trauma relational growth factor; Subscale 1 = PTG appreciation of life; Subscale 2 = PTG spiritual growth; Subscale 3 = PTG personal strength; Subscale 4 = PTG new possibilities; Subscale 5 = PTG relationships with others; SRG = stress-related growth.

†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

TABLE 4 Partial Correlations Between Posttraumatic Growth Variables and Specific Traumatic Events After Controlling for Demographics.

Traumas	Subscale 1	Subscale 2	Subscale 3	Subscale 4	Subscale 5	F1	F2	PTGI Scale
Been tortured in jail	.270	.316*	.273	.151	.187	.258*	.052	.105
War or combat	.219**	.155†	.130	.130	.141†	.151†	.061	.178†
Experienced life-threatening illness or permanently disabling event	.182*	.179*	.148†	.134	.033	.233**	−.088	.156†
I witnessed heard one of my parents or caregivers hitting, hurting, and/or threatening to kill my other parent or caregiver	.017	−.110	−.038	−.034	−.065	.040	−.140†	−.039
My mother abandoned or left me when I was young	.090	−.016	.062	.091	.077	.070	.031	.090
My father abandoned or left me when I was young	.152†	.151†	.165*	.158*	.072	.190*	−.015	.160*
I have experienced a nervous breakdown or felt that I was about to have one (e.g., about to lose control) due to seemingly small but recurrent or unremitting hassles or chronic stressors	.131	.154†	.151†	.134	.107	.192*	−.022	.144
I experienced serious rejection or failure in my relationships	.204*	.018	.074	.131	.105	.160*	−.017	.125
I experienced school or college failures or employment termination, have been laid off, or have failed in business	.190*	.039	.053	.090	.121	.091	.057	.135
I was uprooted and forced to move from my favorite environment in a town or a village	.190*	.099	.105	.173*	.104	.147†	.043	.210*
I was involuntarily uprooted from my country of origin and forced to relocate	.215**	.102	.157†	.097	.084	.201*	−.055	.236**
I have been attacked or hit by a person or persons who are bigger and stronger than me	.190*	.105	.184*	.186*	.186*	.146†	.129	.188*
My parents discriminated against me because of my gender (being girl or boy)	.110	−.103	−.023	−.005	−.041	.046	−.092	−.009
Other people and institutions and communities discriminated against me because of my gender	.131	.165†	.160†	.127	.201*	.159*	.081	.198*
My race, ethnic group, or tribe has a history of being oppressed, discriminated against, or threatened by genocide	−.143†	−.251**	−.202*	−.099	−.157†	−.179*	−.048	−.223*
I experienced being part of a poor family with many hardships	−.087	−.062	−.093	−.080	−.045	−.098	.005	−.106
I was led to sexual contact by a peer or someone older than me	.059	.013	.052	.039	.032	.043	.014	.049
I was led to sexual contact by one of my caregivers/parents	.093	.000	.079	.097	.065	.091	.011	.093
I have been raped or forced to have sex	.120	.069	.074	.047	.069	.061	.049	.087

Note. F1 = post-trauma internal growth factor; F2 = post-trauma relational growth factor; Subscale 1 = PTG appreciation of life; Subscale 2 = PTG spiritual growth; Subscale 3 = PTG personal strength; Subscale 4 = PTG new possibilities; Subscale 5 = PTG relationships with others.

†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

significant linear and curvilinear predictor of PTG. Executive function deficits were curvilinear predictor of PTG.

Cumulative trauma, negative appraisal of traumatic events, and survival trauma were linear and curvilinear predictors of PTG. Secondary traumas only linearly predicted PTG. Table 5 describes these associations.

TABLE 5 Curve Estimation Regression Statistics for the Linear and Nonlinear Relationships Between PTG as a Dependent Variable and Trauma and Mental Health Variables as Independent Variables.

Independent variables/model	R^2	F	b1	b2	b3	SE	Beta for b1	Model sig.
CTD (complex PTSD)								
Linear	.034	4.51	.38			.180	.183	.036
Quadratic	.073	5.07	1.88	−.030		.67	.90	.008
Cubic	.073	3.38	1.45	−.01	.00	1.67	.71	.020
PTSD								
Linear	.011	1.15	.16			.15	.10	.286
Quadratic	.025	1.36	.75	−.01		.49	.49	.26
Cubic	.05	1.88	−.88	.05	.00	1.08	−.58	.14
Depression								
Linear	.04	4.865	.445			.202	.190	.029
Quadratic	.04	2.738	.904	−.013		.615	.386	.068
Cubic	.06	2.746	−1.04	.126	−.002	1.331	−.443	.046
Anxiety								
Linear	.030	4.073	.530			.263	.174	.046
Quadratic	.030	2.026	.597	−.003		.686	.196	.136
Cubic	.031	1.386	.157	.034	.000	1.393	.052	.250
CTD-depression anxiety comorbidity syndrome								
Linear	.035	4.752	1.656			.760	.188	.031
Quadratic	.090	6.413	8.943	−.584		2.709	1.014	.002
Cubic	.096	4.530	3.961	.476	−.059	6.239	.449	.005
Executive function deficits								
Linear	.019	2.497	1.230			.778	.137	.116
Quadratic	.052	3.535	5.881	−.624		2.322	.657	.032
Cubic	.053	2.405	8.149	−1.40	.066	5.701	.910	.070
Cumulative trauma occurrence								
Linear	.046	6.327	.875			.348	.215	.013
Quadratic	.042	5.737	1.511	−.025		.957	.372	.036
Cubic	.041	2.763	4.264	−.247	.005	3.275	1.050	.061
Negative appraisal of traumatic events								
Linear	.036	4.911	.498			.225	.191	.028
Quadratic	.055	3.735	1.141	−.018		.464	.437	.026
Cubic	.055	2.498	.897	−.003	.000	.344	.908	.063
Survival traumas								
Linear	.035	4.685	1.831			.846	.187	.032
Quadratic	.045	3.008	4.477	−.323		2.454	.456	.050
Cubic	.070	3.193	12.596	−2.65	.162	5.003	1.283	.026
Secondary trauma								
Linear	.039	5.300	1.736			.754	.198	.023
Quadratic	.040	2.692	2.434	−.083		2.153	.278	.072
Cubic	.042	1.868	4.357	−.643	.038	4.398	.497	.138

Hierarchical Multiple Regression Results

To check the second part of the study's second hypothesis that PTG is not a predictor of any post-trauma symptoms, a hierarchical multiple regression analysis was conducted with gender, age, marital status, level of education, and cumulative negative appraisals of traumatic events in the first block and PTG in the second block. As hypothesized, PTG was not a significant predictor of any post-trauma symptoms. Negative appraisal of traumatic events was the strongest predictor in all models. Gender was a smaller but significant predictor of CTD and depression. Table 6 describes these results.

TABLE 6 Hierarchical Regression With PTG (Dependent Variable) and Depression, Anxiety, PTSD, and CTD.

Predictors Entered	*B*	*SE* (*B*)	*β*	R^2 change	B	*SE* (*B*)	*β*	R^2 change
	PTSD (dependent variable)				CTD (dependent variable)			
First step								
Gender	6.38	3.479	.18	.164**	5.96	2.31	.24**	.130**
Age	.028	.233	.016		.11	.136	.086	
Marital status	5.94	3.588	.21		.94	1.893	.051	
Education	−.57	1.56	−.04		−.156	1.085	−.013	
CT NA	.544	.158	.35***		.34	.109	.29***	
Second step								
Gender	6.342	3.516	.18	.000	5.87	2.321	.23**	.004
Age	.027	.235	.02		.11	.136	.09	
Marital status	5.887	3.639	.21		.85	1.903	.05	
Education	−.579	1.571	−.04		−.18	1.088	−.015	
CT NA	.541	.160	.34***		.33	.11	.27***	
PTG	.008	.066	.01		.03	.04	.06	
	Depression (dependent variable)				Anxiety (dependent variable)			
First step								
Gender	5.171	2.079	.23**	.128**	1.83	1.606	.104	.131**
Age	.007	.122	.01		−.002	.10	−.002	
Marital status	2.460	1.703	.15		1.47	1.32	.115	
Education	−.609	.976	−.06		−.25	.754	−.030	
CT NA	.266	.098	.25***		.28	.08	.34***	
Second step								
Gender	4.954	2.061	.22**	.026	1.724	1.608	.098	.009
Age	.006	.121	.005		−.002	.095	−.003	
Marital status	2.234	1.690	.136		1.363	1.318	.107	
Education	−.661	.966	−.061		−.276	.754	−.033	
CT NA	.229	.099	.21**		.266	.078	.32***	
PTG	.070	.039	.16		.033	.030	.099	

Note. Gender, age, marital status, education, and negative appraisal of cumulative trauma were entered in the first step and PTG in the second step (as independent variables). CT NA = cumulative trauma negative appraisal.

**$p < .01$; ***$p < .001$.

DISCUSSION

The novelty of the current study findings is in identifying the types of traumas and the specific traumas that are associated with negative, neutral, or positive PTG or with one of its components and exploring the linear and nonlinear dynamics of these relationships. Another contribution of the study is identifying some of the conceptual and empirical differences between PTG and SRG. Additionally, the current work shows the importance of looking at PTGI subscales

The study findings generally confirmed the study hypotheses and added some different details. Survival, uprootedness and secondary trauma types (type I traumas) were associated with PTG. However, personal identity (e.g., sexual abuse) and attachment traumas (e.g., mothers' abandonment) (mostly type II traumas) do not seem in general to relate significantly to PTG, while collective identity traumas (e.g., discrimination and poverty) (type III traumas) were negatively associated with PTG. Not each type of trauma was associated with PTG, and some appeared to seriously impede growth.

However, the results of the study suggest that PTG is a unique concept that is different from SRG. SRG was not associated with any trauma types and was negatively associated with mental health symptoms, which seems to describe the normal growth that happened in the course of everyday life, not necessarily following traumas. It is important not to assume that SRG and PTG are equivalent. Researchers who come to conclusions about PTG using the SRGS may be contributing to confusion.

In exploring specific traumatic events and their association with PTG or one of its components, the results indicated that torture, while not associated with total PTG scores, was significantly associated with internal and spiritual growth (cf., e.g., Kira et al., 2006). War or combat traumas, while not associated with total PTG scores, were significantly associated with appreciation of life subscale scores (cf., e.g., Pietrzak et al., 2010). Experiencing life-threatening illnesses, while not associated with total PTG scores, was associated with internal growth, appreciation of life, and spiritual growth (for a review of research on the relationship between PTG and life-threatening illnesses, see Barskova & Oesterreich, 2009). While abandonment by mother was not associated with any PTG scales, abandonment by father was associated with PTG total scores and internal self-growth, personal growth, and new possibilities subscale scores. Experiencing non-traumatic recurrent or unremitting hassles or chronic stressors and serious rejection or failure in relationships were found to be significantly associated with only internal growth. Uprootedness (e.g., refugees' experience) was associated with total PTG scores and internal growth. While gender discrimination by parents was not associated with PTG or any of its components, gender discrimination by

society was associated with the PTG total scale, as well as with the inner growth and relationships with others subscales. Being oppressed, being discriminated against, and history of genocide were associated with negative or lower total PTG (cf., e.g., Powell et al., 2003).

While PTSD was not significantly related to PTG, CTD was a significant curvilinear predictor of PTG. Depression/anxiety comorbidity syndrome and executive function deficits were significant curvilinear predictors of PTG. Additionally, cumulative trauma, negative appraisal of traumatic events, and survival traumas were found to be curvilinear predictors of PTG.

Conversely, and consistent with the study hypotheses, hierarchical multiple regression analyses found that PTG was not a significant predictor of any of the mental health variables (PTSD, CTD, anxiety, and depression). Negative appraisal of traumatic events was the most powerful predictor in all models. Gender was a smaller but significant predictor of PTSD, CTD, and depression. Measures of mental health (e.g., symptoms) were curvilinearly related with growth, but PTG was not predictive of mental health concerns. The curvilinear association between cumulative traumas, type I traumas, CTD, and PTG suggests that lower and higher levels of traumas and symptoms may not increase growth, while moderate levels correspond to the greatest growth. The results of the present study suggest several neutral and negative associations between some traumas and PTG. These results do not necessarily mean that PTG cannot be achieved through intervention and prevention with victims of such traumas. However, the results do highlight potential areas of targeted focus and interventions for survivors of these types of trauma.

The trauma profile of the study participants reflected high survival trauma, followed in its intensity by secondary traumas and collective identity traumas. While survival and secondary traumas were associated with posttraumatic growth, collective identity traumas were negatively associated with PTG, suggesting that they may be an impediment to growth. These competing forces, as expressed when adding them together in cumulative dynamics (cumulative trauma), resulted in a modest to moderate degree of posttraumatic growth. These results suggest that it is important to analyze the trauma profiles of individuals and groups to better understand and design targeted interventions to help them. For multiply traumatized individuals and groups, their trauma profiles, rather than the existence of any specific trauma, may be more predictive of their potential posttraumatic growth or decline. These findings suggest that trauma profile analysis can assist clinicians and interventionists in identifying trauma survivors' potential posttraumatic strengths, to better plan interventions.

Limitations

The current study has several limitations. One of the limitations is that we used a relatively small sample recruited from the community using

snowballing techniques; such samples may involve limited representation of the population under study. More studies using probability samples are recommended. Further, several analyses were conducted, which may have increased the risk for type 1 errors. Considering this fact, caution should be exercised in interpreting the results that are not highly significant.

Another limitation of the study is that the measurement of cumulative trauma was based on participants' self-reports, which could be subject to under- or over-reporting of events due to current symptoms, embarrassment, shame, or social desirability. In addition, the study used a cross-sectional design and, as a result, only probabilistic relationships can be drawn from the results. Lastly, results obtained from groups may not apply for every individual within the group. Some individuals may show positive growth in some traumas that are associated with PTG inhibition at the group level.

Despite these limitations, the results of this study provide evidence of associations that may help in the prediction and formulation of additional research hypotheses and in identifying some of the dynamics of the relationship between different trauma types, PTG, and mental health outcomes.

REFERENCES

Barskova, T., & Oesterreich, R. (2009). Post-traumatic growth in people living with a serious medical condition and its relations to physical and mental health: A systematic review. *Disability Rehabilitation*, *31*, 1709–1733.

Breslau, N. (2009). The epidemiology of trauma, PTSD, and other post trauma disorders. *Trauma Violence & Abuse*, *10*, 198–210.

Cohen, L. H., Hettler, T. R., & Payne, N. (1998). Assessment of posttraumatic growth. In R. G. Tedeschi, C. L. Park & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 23–42). Mahwah, NJ: Erlbaum.

Johnson, R. J., Hobfoll, S. E., Hall, B. J., Canetti-Nisim, D., Galea, S., & Palmieri, P. A. (2007). Posttraumatic growth: Action and reaction. *Applied Psychology*, *56*, 428–436.

Kalton, G., & Anderson, D. (1986). Sampling rare populations. *Journal of the Royal Statistical Society*, *149*, 65–82.

Kira, I. (2001). Taxonomy of trauma and trauma assessment. *Traumatology*, *2*, 1–14.

Kira, I. (2004). Secondary trauma in treating refugee survivors of torture and their families. *Torture*, *14*, 38–44.

Kira, I. (2010). Etiology and treatments of post-cumulative traumatic stress disorders in different cultures. *Traumatology: An International Journal*, *16*, 128–141.

Kira, I., Clifford, D., Wiencek, P., & Al-Haidar, A. (2001). *Iraqi refugees in southeast Michigan: First report*. Dearborn, MI: ACCESS Community Health and Research Center.

Kira, I., Lewandowski, L., Templin, T., Ramaswamy, V., Ozkan, B., & Mohanesh, J. (2008). Measuring cumulative trauma dose, types and profiles using a development-based taxonomy of trauma. *Traumatology*, *14*, 62–87.

Kira, I., Templin, T., Lewandowski, L., Clifford, D., Wiencek, E., Hammad, A., ... Mohanesh, J. (2006). The effects of torture: Two community studies. *Peace and Conflict: Journal of Peace Psychology*, *12*, 205–228.

Kira, I., Templin, T., Lewandowski, L., Ramaswamy, V., Bulent, O., Abu-Mediene, S., ... Alamia, H. (2011). Cumulative tertiary appraisal of traumatic events across cultures: Two studies. *Journal of Loss & Trauma*, *16*, 43–66.

Levine, S., Laufer, A., Hamama-Raz, Y., Stein, E., & Solomon, Z. (2008). Posttraumatic growth in adolescence: Examining its components and relationship with PTSD. *Journal of Traumatic Stress*, *21*, 492–496.

Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress*, *17*, 11–21.

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety and Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behavior Research and Therapy*, *33*, 335–342.

Maercker, A., & Langner, R. (2001). Posttraumatic personal growth: Validation of German versions of two questionnaires. *Diagnostica*, *47*, 153–162.

McFarlane, A. C., & Yehuda, R. (1996). Resilience, vulnerability, and the course of posttraumatic reactions. In B. van der Kolk, A. McFarlane & L. Weisaeth (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society* (pp. 155–181). New York: Guilford Press.

Mulrow, C., Williams, J. W., Gerety, M. B., Ramirez, G., Montiel, O. M., & Kerber, C. L. (1995). Case-finding instruments for depression in primary care settings. *Annals of Internal Medicine*, *122*, 913–921.

Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality*, *64*, 71–105.

Pietrzak, R., Goldstein, M., Malley, J., Rivers, A., Johnson, D., Morgan, C., & Southwick, S. (2010). Posttraumatic growth in veterans of Operations Enduring Freedom and Iraqi Freedom. *Journal of Affective Disorders*, *126*, 230–235.

Powell, S. Rosner, R., Butollo, W., Tedeschi, R. G., & Calhoun, L. G. (2003). Posttraumatic growth after war: A study with former refugees and displaced people in Sarajevo. *Journal of Clinical Psychology*, *59*, 71–83.

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385–401.

Richmond, J. M., Elliott, A. N., Pierce, T. W., Aspelmeier, J. E., & Alexander, A. A. (2009). Polyvictimization, childhood victimization, and psychological distress in college women. *Child Maltreatment*, *14*, 127–147.

Solomon, Z., & Dekel, R. (2007). Posttraumatic stress disorder and posttraumatic growth among Israeli ex-POWs. *Journal of Traumatic Stress*, *20*, 303–312.

Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, *9*, 455–471.

Weathers, F., Keane, T., & Davidson, J. (2001). The Clinician-Administered PTSD Scale: A review of the first ten years of research. *Depression and Anxiety*, *13*, 132–156.

Weiss, T., & Berger, R. (2006). Reliability and validity of a Spanish version of the Posttraumatic Growth Inventory. *Research on Social Work Practice*, *16*, 191–199.

Ibrahim A. Kira is a clinical psychologist, scholar, and researcher. He is the director and founder of the Center for Cumulative Trauma Studies, Stone Mountain, Georgia. His interest focuses on taxonomy and measurement of traumatic stress and the effects of cumulative trauma, appraisal, and value processing, as well as issues of torture treatment, social justice, peace, and conflict resolutions.

Sharifa Aboumediene is a medical doctor in Dearborn, Michigan, and a research associate at the Center for Cumulative Trauma Studies. Her research interests include the effects of trauma on physical and mental health of Palestinian children and adults.

Jeffrey S. Ashby is a professor in the Department of Counseling Psychology at Georgia State University, Atlanta. His research interests include stress and coping, perfectionism, and other cognitive structures.

Lydia Odenat is a PhD candidate in counseling psychology at Georgia State University and a research associate at the Emory University School of Medicine, Atlanta. Her research specialization is torture survival and coping.

Jamal Mohanesh is a clinician and researcher at the ACCESS Community Health and Research Center, Dearborn, Michigan. He is also a research associate at the Center for Cumulative Trauma Studies. His research interests include refugee discrimination and anxiety measurement.

Hala Alamia is a research associate at the Center for Cumulative Trauma Studies. Alamia's research interest is traumatic experiences in intergroup conflict.